

Evaluation of the Impact of Intravenous Contrast Medium Injection on Kidney Length in Clinically Healthy Dogs Using Computed Tomography

*Department of Diagnostic Imaging, Olliolis Veterinary Hospital, 40 Chemin du Clos du Haut, 83190 Ollioules, France

V@i•A•c•ã^Àæi { •Ác [Á^Çæ] æ^Ác@^Á^ ^&ç [-Áã) çíæÇ^ } [~ •Á& [] çíæ•ç { ^ãã~ { Áã} b^&çá [] Á [] Á\iã} ^~Á| ^ } *c@Á •ã} *Á& [{] ~ c^ãÁ tomography (CT) in clinically healthy dogs. A retrospective analysis was conducted on CT examinations of the abdomen performed in 113 dogs (43 females, 70 males). Kidney lengths (K) were measured on precontrast and post contrast images. They were normalized using the length of the body of the second lumbar vertebra (L2), expressed as K/L2 ratio, æ) á& [{] æi^ãÁ~ •ã} *Á] æi^ãÁÉc^•c•ÉÁU!^& [] çíæ•ç { [i { æjã: ^ãÁ\iã} ^~Á| ^ } *c@Á, æ•ÁHÉÉH tÉÉG i Á- [iÁc@^Áiã* @ç\iã} ^~ÁÇU:ÜSDæ) áÁ GÉJ t tÉÉHFÁ- [iÁc@^Á| ^~ç\iã} ^~ÁÇU:ÜSDÉÁU [•ç& [] çíæ•ç { [i { æjã: ^ãÁ| ^ } *c@Á, æ•ÁHÉÉ t tÉÉHÉÁ- [iÁc@^Áiã* @ç\iã} ^~ÁÇU:ÜSDæ) áÁ HÉÉ tÉÉHFÁ- [iÁc@^Á| ^~ç\iã} ^~ÁÇU:ÜSDÉÁU } Áá [c@Á] !^& [] çíæ•çæ) áÁ] [•ç& [] çíæ•çæ& ~ ~ã•çá [] •ÉÁc@^Áiã* @çÉÉHÁSDSGÁ- [iÁá [c@Á\iã} ^~Á& [{] æi^ãÁç [Á] !^& [] *c@Ác@æ) Á-^ { æ| ^•Áã} Áá [c@Á] !^& [] çíæ•çæ) áÁ] [•ç& [] çíæ•çá { æ^•ÁÇUÁÉÉÉÍDÉÁQ) çíæÇ^ } [~ •Á& [] çíæ•ç { ^ãã~ { Áã} b^&çá [] Á !^• [c•Áã} ÁæÁ iã* @çá~ çí•ã} ~ã, &æ) çÁã} &!^æ•Áã} Á\iã} ^~Á| ^ } *c@Áã} Áá [*•Á [] ÁÓVÉÁV@ã•Áã} &!^æ•Áã•Á& [] •ã•c^ } çÁá^c, ^~Ác@^Áiã* @çæ) áÁ| ^~ç\iã} ^~ÉÁV@i•A•c•ã^Àæi [Á- [~ } áÁã} @^!^ } çÁæ) æç [i&æ| ÁÇæiæçá [] •ÉÁ, áç@Á { æ| ^•Á@æçá} *Á| [] *^!Á} [i { æjã: ^ãÁ\iã} ^~Á c@æ) Á-^ { æ| ^•Áæ) áÁc@^Áiã* @ç\iã} ^~Áã^ã} *Á| [] *^!Ác@æ} Ác@^Á| ^~çÉÁV@^•Á, } áã} *•Á• ~ **^•c@çá\iã} ^~Á| ^ } *c@Á { ^æ•~!^ { ^ } c•Á &æ) ÁáÁÁ!^æá| ^Á] Á- [i { ^ãÁá^~ [!^Á [iÁæ~c^!Áã} çíæÇ^ } [~ •Á& [] çíæ•ç { ^ãã~ { Áã} b^&çá [] Áã} Á&| Á} á&çá } *•É

Emeline Gruget, Department of Diagnostic Imaging, Olliolis Veterinary Hospital, 40 Chemin du Clos du Haut, 83190 Ollioules, France, E-mail: emeline@gruget.com

ÉFÉTæ^ÉGÉG IÉÁ Tæ} ~•&|ã} çÁÞ [ÉÁç { @ÉG IÉFH I J I L 04- Tæ^ÉGÉG IÉÁU:ÁÉÓÁÞ [ÉÁç { @ÉG IÉFH I J I ÁÇUÓDLÁ

(Iobitridol, iodine concentration 300 mg/mL, Xenetix 300®, Guerbet, France).

- Patient information such as gender, age, breed, and body weight of the dogs, were recorded in the database.

Dogs were excluded from the study if the quality of CT images was poor (due to motion artifact or for any other reason).

Computed Tomography Measurements

Patient DICOM data were reviewed on a computer workstation using Osirix software. The length of both kidneys was measured on CT precontrast and post contrast acquisitions displayed with a window width (WW) of 350 Hounsfield units (HU) and a window level (WL) of 40 HU. Kidney length measurements were performed with the digital ruler of the software as the maximal longitudinal length measured on a dorsal multiplanar reconstruction [Figure 1]. The length of the body of the second lumbar vertebra (L2) was measured using the digital ruler on dorsal multiplanar reformatted images displayed with a WW of 1,500 HU and a WL of 300 HU [Figure 2]. Each measurement of the kidney length (K) and L2 body length was performed 5 times for each case, and the final measurement was considered as the mean of the five measurements.

Statistics

Standardization of Dimensional Values

- Precontrast right kidney length (PrRK), precontrast left kidney length (PrLK), post contrast right kidney length (PcRK), and post contrast left kidney length (PcLK) were measured for each dog.

- These measurements were normalized using the length of the body of L2, expressed as K/L2 ratio.

Right and Left Kidney Length Comparison

- Normalized PrRK and PcRK were compared to normalized Right and Left Kidney Length Comparison, 27.40

kg; range, 2.6 to 48 kg). The average length of L2 was 2.02 ± 0.5 cm. All groups had a normal distribution based on the QQ-plots analysis. The normalized mean precontrast value of right and left kidney length was 3.0 ± 0.3 . Normalized PrRK was 3.03 ± 0.28 whereas normalized

kidney owing to its deepest and subcostal location [28].

-
17. T̃ iæ\æ { šh TĒĀP;•@šh ÜĒŠ^ } [šh SPĀÇGEGHDĀŌ [{] ~c^āāc [{ [* iæ] @šh { ^æ•~!^•Ā [-Ā
Ü^ } [{ ^*æ] ĀÇæi ~Āæ { [] *ĀĀ [* Ā, āc@Āāā ^!^) cĀc^] ^•Ā [-Ā& [] *^) ācæ]Ā] [ic [••c^ { šhĀ
•@~ } c•ĒX^cĀÜæāš [|ĀW|c|æ• [~ } āĀFĒ |Ē
 18. Ō [] *ĀPĒĀP, æ } *ĀRĒĀŌ@ [šh ŌSĀÇGEGFDĀÜ^]æcā [] •@šh ĀCE { [] *ĀV [cæ]ĀSĀā ^ĀX [] ~ { ^ĒĀ
Ü^ } æ|ĀŌ~ } Ācā [] Āæ } āĀCE *^ĒĀRĀW! [|ĀF | Ī FĀĤH | ĪĒH | JĒ
- 19.